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SOCIETY OF ARTS.

FRIDAY, JANUARY 21st, 1853.

SEVENTH ORDINARY MEETING,

Wednesday, January 19th, 1853.

The Seventh Ordinary Meeting of the Society was held on Wednesday, the 19th inst., Henry Thomas Hope, Esq., Vice-President, in the Chair.

The following were elected Members :

Boosey, Samuel, 7, Nutford-place, Edgeware-road
Goodeve, Thomas Minchin, King's College
Hunter, George Yeates, Cecil-square, Margate
Scamell, George, Melrose-lodge, Holloway
Walters, Frederick, 16, Moorgate-street,

and the names of eleven candidates for membership were read.

The Secretary drew attention to some fine specimens of native borate of lime from South America, exhibited by Mr. Bollaert.

A paper was read by A. Claudet, Esq., on "The Stereoscope and its Photographic Applications."

M. Claudet, after having given a brief history of the splendid discovery of Professor Wheatstone, of the principles of binocular vision, and described his instrument called the Stereoscope, by which he has illustrated various curious phenomena of vision ; stated that Sir David Brewster, in a paper read before the British Association at Birmingham in 1849, on various phenomena of binocular vision, brought forward a Stereoscope based on the principle of the refracting Stereoscope of Professor Wheatstone, particularly adapted to the inspection of daguerrotype pictures, and formed of two semi-lenses, which Sir David Brewster called the Lenticular Stereoscope. Some time after, Sir David Brewster, being in Paris, had occasion to give the description of this instrument to M. Duboscq Soleil, an optician of that city ; who, struck with the advantages of applying the Stereoscope to photographic pictures, had the enterprise to construct a number of these instruments for that purpose. In the beginning of 1851, some were exhibited at one of the *soirées* of Lord Rosse, with daguerrotype pictures, and the effect produced a considerable interest. From that moment the attention of English photographers was awakened, and M. Claudet immediately began to execute daguerrotype pictures and portraits for the Stereoscope. This new art excited very great interest in the scientific and artistic world—and stereoscopic portraits and other pictures being now so universally known, the time has come when it is necessary to explain how flat pictures could give the illusion of real models, with all the effect of relief and distance.

Having given a description of the human eye, which is a hollow sphere, having at one pole the pupil, and at the other the optical nerve, conveying the sensations to the brain, and the remaining part of the interior being called the retina, and receiving the impression of all objects viewed by the pupil—the various pencils from all parts of the object viewed coming to a point in the pupil—crossing each other, and therefore being imprinted upside down on the retina, he began by showing that the principal sensations of vision are the result of habit ; and that these sensations may be varied by many changes in the ways of their perception.

Single vision by means of two eyes is due to the property by which similar parts of the two retinæ unite to produce on the mind a single impression of the same image. Supposing that the two retinæ were like two spheres, having for their axes the optical axes,—and that from the point in the centre of each retina the two spheres were divided in degrees of latitude and longitude, each point of the two retinæ, at the crossing of the same degrees of longitude and latitude have the same sensation, that when the images of objects, by the proper convergence of the optical axes, are falling on the same parts of the two retinæ, a single vision is obtained for all objects situated at the same distance before the eyes in a circle called the horopter. The two lines of objects beyond and within this circle, forming with the two eyes an angle different to the angle by which the two visual axes would coincide with the centre of the two retinæ, in that angle they do not coincide with the axes of the supposed divided spheres—one falls on the left of the centre of the left retina, and the other on the right retina, therefore they fall on two different degrees of longitude and latitude, and consequently on parts of the retina, which coming on the sensorium of vision, produces a different sensation and two different images.

The brain is never sensible of perceiving an object single, unless the axes of the eyes are directed on that object, when the image is imprinted on each of the retinæ exactly opposite the pupil, all other objects appearing double—the far objects being imprinted on the inner parts of the retinæ, or the parts nearer the nose, and the near objects on the opposite sides.

We are enabled to judge of the distance of objects one from another, by the angle which the two pencils of light reflected from the two objects, make at the pupil, where they converge ; the larger this angle is, the larger is the vertical angle on the other side of the pupil, or within the eye, and consequently the farther apart on the retinæ are the points at which the two pencils strike it, and therefore the idea of distance of the objects one from another.

In looking at a solid, having height, breadth, and length, the different points in the line of projection corresponding with the breadth, are situated at different distances from the eyes, and therefore an angle of convergence which cause the nearest point to fall in the direction of the axes of the supposed spheres makes the farther point fall out of that direction ; where the nearest point produces single vision, the farthest point produces double vision. In order to see the farthest point single, the optical axes are to converge on that point, and then the nearest appears double. The sensation arising from that alteration of convergence is one of the causes giving an idea of distance. When the angle of convergence is greater, we are accustomed to judge that the object is nearer, and when the convergence is less, we conclude that the object is farther.

The double image of nearer objects than the one giving single vision, are represented, one on the left eye, on the left of the axis of the supposed sphere, and the other on the right eye on the right of that axis.

The reverse is produced in the order of the double images for farther objects. From the sensation of these double images on each opposite side of the two retinæ, we have the idea of farther or nearer objects.

When we look with two eyes at a solid, some parts of this solid, visible to one eye, are invisible to the other; we have two different sensations at once, and from these sensations we judge by habit that the object we look at is a solid.

When we look with two eyes at a wall, before which there is a lamp-post, the lamp-post hides no part of the wall, because the part hidden to the right eye is visible to the left, and the part hidden to the left is visible to the right. On shutting one eye there is a part of the wall behind the lamp-post which we cannot see. With two eyes, by the degree of separation of the images of the lamp-post, we judge of its distance from the wall; with one eye we have only one image of the lamp-post, covering entirely one part of the wall, and we cannot judge how far it is from the wall,—it appears stuck against it.

If we hold the end of a stick before us, with one eye we shall find some difficulty in knowing how much we must extend the arm in order to touch the stick with one finger,—we shall hesitate a few instants until we can find the exact distance; but with two eyes we can at once, and with the greatest precision and rapidity, touch the end of the stick. Therefore double vision gives the idea of distance.

In order to obtain a single vision of an object with two eyes, we are obliged, in order to obtain the coalescence of the two images on the similar parts of the retina, to direct the axes of the eyes upon that point. The objects before and behind appear double because, by the convergence of the optical axes for these objects, the optical axes do not coincide with the axes of the supposed spheres, and the various parts of the images of those near and far objects fall on dissimilar parts of the two retinæ.

If we place one finger at a short distance before the eyes, and another a little farther, and direct our vision upon the first, it will be seen single while the second will appear double; but if our attention is directed upon the second, then the second will be seen single, and the first double.

In the first case the double image of the right eye will appear on the right of the single image, and the double image of the left eye on the left; but in the second case the double image of the right eye will appear on the left of the single image, and the double image of the left eye on the right.

From the planes of the separation of the double images before or behind the object we look at, we judge by habit that the double objects are nearer or farther. If we increase or diminish by artificial means, such as by squinting inward, or by the Stereoscope, the separation of the double images, we conclude that they are at the distance they would be in natural vision.

If we invert the planes, where, for nearer and farther objects, the double images would be by natural vision, showing on the right what is to be on the left, and *vice versâ*, as we can do by the Pseudoscope, or by squinting outwards, we have the illusion of near objects appearing far, and far objects appearing near.

Binocular vision gives an idea of form, solidity and distance, because the perspective projection of the two eyes are different; and when these two different images, by the proper convergence of the optical axes, coincide on similar parts of the two retinæ, we have the sensation of only one image, but only for one distance; the objects nearer and farther are seen double; and from their duplicity, and their separation on the right or on the left, we judge of the other distances before or behind.

It is very difficult to convince some persons that they see all objects double, except the one upon which the optical axes are directed. Indeed, it is by no means easy for many people to squint, so as to see the objects double, until they have practised some little time. It is also hard to explain why the sensation of the double objects which are imprinted on the retinæ is not carried to the brain. The only solution that can be given, is, that it is the result of habit, which also gives us the idea of things being of their true shape, and in their proper position, instead of being inverted as they are represented on the retina.

Indeed, in nature there are many examples of sensations which are conveyed to the mind in a contrary manner; or the mind is sensible that the true fact is the reverse of what the senses seem to convey. Thus it is, that in a boat upon a river, the objects on the banks seem to move, because we have no sensation of moving ourselves; but still from habit we are sensible that it is ourselves, and not the objects which are moving. Again, if we cross the first and second finger, and with them so crossed, touch a pea, we have the sensation of touching two peas, because, in the natural order of things, the parts of the fingers which are now touching the pea, could not at the same time touch the same object. Yet we still know that we are touching but one pea. And again, we are accustomed to hear a louder sound when a person is speaking to us in a room, than when the same person is out of the room; but if this person near us utters a sound similar, as much reduced in intensity as the voice of a person out of the room, we have the illusion of the sound coming from the outside.

Photography alone can produce two images perfectly identical to the images on the two retinæ; and if we can place them, so that the right perspective is seen only by the right eye, and the left perspective only by the left eye, we have on each retina the same representation we had from looking at the natural objects.

This is precisely the effect of the Stereoscope; for if we take two views of the same object, one similar to that which would be seen by the right eye alone, and the other similar to that seen by the left eye, then place each picture under each eye, and, by means of two prisms, refract them on the two retinæ in planes where they coalesce; the right picture is refracted towards the left, and the left towards the right, on the middle space between them, and there they coincide, as the two pictures of the natural objects.

But they do not coincide in all their parts, any more than the natural images for their various planes; and, as in natural vision, we are obliged, in surveying the stereoscopic pictures, to alter the convergence of the optical axes, according to the various places they represent. The act of altering the convergence for the various planes, gives the sensation of distance of these planes; and during that convergence, the objects nearer or behind are felt double on the two retinæ; the double images on the right of one eye, and on the left of the other, indicate near distances; and on the left or right, indicate far distances. Therefore, in the Stereoscope we have the same sensation of solidity and distance as we have with two eyes.

If the perspective projections of the daguerrotype images are taken at a greater angle than they are with the eyes for the same apparent size, the optical axes have to alter their convergences in a greater ratio in passing from one point to another; the double images within and beyond the point of vision are more separated than in the natural vision; and from these two exaggerated effects, we conclude or feel that the objects are more separated than they are in nature, and that the distance or relief is greater.

By magnifying more or less the stereoscopic pictures, we, by the same reason, increase, less or more, the stereoscopic effect.

This is exemplified by looking with a double opera-glass: if we look through the large lens near the eye, we decrease considerably the sizes of objects; and as the angle of vision remains the same as for natural vision, it is too large for the perspective projection of the objects; for this reason the distances between the various planes appear exaggerated, and the objects more in relief than they really are,—because the eyes have to alter more their convergence, in surveying the various planes, than they would have to do, if the objects were really at the distance at which they appear to be.

In looking through the eye-pieces of the same opera-glass, we have a contrary effect, and a very unpleasant one, as we magnify the pictures. If they were seen by the eyes at the distance they appear to be, the angle of the optical axis would be larger than the natural angle; and the exertion in converging from one point to another of the magnified picture is less through the opera-glass than it should be if we were looking at the distance giving the same size of image on the retina. For this reason, double opera-glasses are defective, and produce an incongruous sensation, which is very disagreeable. A single opera-glass is far preferable, and gives the idea of greater distance between the objects, and more relief of their various parts, than a double glass.

These few extracts from the elaborate paper of M. Claudet will suffice to explain the phenomena of the Stereoscope applied to photographic pictures.

One of the most remarkable observations to which he refers is, the singular similarity of effects between squinting outwards and the Stereoscope, and squinting inwards and the Pseudoscope.

By squinting outwards on a stereoscopic slide, we have without the Stereoscope the same effect of relief and distance; and by squinting inwards, the same effect of intaglio and inverted distances we have with the Pseudoscope; and by squinting, *vice versâ*, for both instruments, we have the pseudoscopic effect with the Stereoscope, and the stereoscopic with the Pseudoscope.

It is easier to squint inwards, as we do when looking near our nose; and to obtain the stereoscopic effect in looking at stereoscopic pictures, we must place the right image under the left eye, and the left image under the right eye: in so doing we have the most beautiful effect of relief and distance, and more perfect than with the instrument, because the lenses and prisms cause always a certain amount of distortion from spherical and chromatic aberrations.

M. Claudet illustrated his lecture by a number of excellent diagrams, by which all the various phenomena were fully explained.

He showed that two exactly similar pictures, placed in the Stereoscope, produced less relief than one of these pictures seen alone with one eye, proving that it is from the gradual coalescence of the various planes of binocular pictures that the sensation of relief and distance are obtained; from this fact he proves why paintings can never represent the distances and relief of nature, or stereoscopic vision; that being the representation of only one perspective projection, such as that we have with one eye, paintings should never be inspected except with one eye, the vision with two eyes of a monocular picture giving a sensation of less relief and distance than the vision with one eye. For this reason, he thinks that those double conical tubes used in picture galleries should be discarded, and that a better perception of distance and relief would be obtained in looking through a single tube with one eye.

To illustrate the effect of the stereoscopic vision, and the necessity of altering the convergence of the optical axes for every plane of the double picture, M. Claudet placed, one against another, two photographic engravings taken for the stereoscope, showing that when the lines of the foreground coincide, the lines of the plane behind are double; and that when they coincide for the background, they are double for the foreground; when coinciding for the middle distance, they are double both for the foreground and for the background. So that in surveying the two pictures in the Stereoscope, the eyes have, as it were, to slide from right to left, and from left to right of the two engravings, in order to have a single vision of any point of the picture the observer wants to look at.

Mr. Wyndham Harding remarked, that the subject of binocular vision might, he believed, be easily understood by any person of ordinary capacity. The two eyes received at the same moment different images; yet the mind had the idea of one object only. As an illustration of this, if a small book were held in the hand before the eyes, by closing each eye alternately, the back and the edges only would respectively be seen; whereas, if the book was looked at with both eyes open, the mind at once recognised its complete form and appearance. M. Claudet had correctly stated that objects on a plane, at a given distance from the eyes, were alone clearly and perfectly seen. When two objects were placed in the Stereoscope, the two were put together; and the axes of the eyes converging on them, immediately made out the truth. The Stereoscope, in fact, did only what the eyes did in squinting. All that the eyes saw perfectly and clearly, was at the point where their two axes converged. After they had converged on one object, they were, by the mere act of volition, removed and brought to bear upon another; and although, in the act of shifting them, a series of double images were presented, so admirably were these organs adapted to the wants of man, that in a healthy organ the confusion arising from this was never perceived.

Mr. Alfred Smee referred to the difficulty experienced by persons who had lost one eye; and to the time which elapsed before they could acquire the facility of correctly measuring distances under such circumstances. That it could be acquired, was shown by the fact that many coachmen and cabmen so afflicted were able to drive through the streets of London with precision and safety. He did not quite agree with M. Claudet in his definition of squinting, which was a term that could only be properly applied to a diseased state of vision. Squinting was not a convergence of the eyes; but consisted in the fact of one eye being directed to one spot, and the other eye to another; in which case, if the vision were perfect, a double image would be presented. We were too much in the habit of looking at objects with one eye; whereas, if we desired to see a beautiful flower or other object in all its perfection of solidity and form, it was necessary to bring both eyes fairly and fully to bear upon it. If this faculty were exercised, even in passing through the streets, the effect would be found to be surprising. Mr. Smee added that it was worthy of notice that only a very small central spot in the retina presented perfect vision. The power of the surface immediately surrounding that spot was less perfect, and the power decreased according to its distance from that point. Here, therefore, was a beautiful provision of Nature; inasmuch as the parts of the retina, which were liable to receive that superposition of objects which M. Claudet had mentioned, and thereby to cause double vision, were less sensible to the minute impressions obtained in the centre of the eye.

M. Claudet explained a series of diagrams, intended to show the different figures of an object formed by the two eyes. He also said that in making use of the term "Squinting," the idea he wished to convey was simply that of the convergence or divergence of the axes of the eyes.

Mr. Winkworth proposed, and Mr. Roger Fenton seconded, a vote of thanks to M. Claudet, which was carried unanimously.

PHOTOGRAPHIC EXHIBITION.

The great interest which was excited by the Photographic Exhibition has led to its being kept open several weeks longer than was originally intended. Members are reminded that this Exhibition, as well as that of recent patent inventions, will close on the 29th of January.

EAST INDIAN EXHIBITION.

The great interest which was excited by the East Indian Department of the Exhibition of 1851, reasonably leads to the expectation that the Indian Department of the Great Dublin Exhibition will form one of the most remarkable and instructive collections of the many which will be brought together; and in this expectation we trust the public will not be disappointed. Independently of the feeling of curiosity and interest which naturally attaches itself to all the productions of oriental ingenuity, investing them, as it were, with a halo of barbaric romance, and filling the mind with visions of the magnificence of the east, there are many other considerations, all tending to render an Indian Exhibition one of peculiar interest; and in truth there is no class of persons, in any rank of life, who would not appreciate such a collection. From the peculiar religion, and from the customs and habits of the nations of India, many traditions and practices have remained unchanged from the most remote ages, and many of the ceremonies and customs which we find described in the early books of Scripture are illustrated and explained by the present ceremonies and customs of the tribes of India. In fact, there is no part of the world so rich in historic evidence and facts, or so instructive to the historian, the ethnologist, or the lover of literature generally. The same causes which have preserved unchanged the peculiar rites of former ages, and resisted the innovating hand of time, have also prevented the improvement of arts and manufactures, and have preserved them to us nearly in the same state as they formerly existed. There is, however, little cause to regret this, for though the arts and manufactures of India may have made little progress for many generations, yet even at the present time their artizans are in many things equal to, and in some few, superior, to those of our own country, with all the advantages of progressive development and scientific skill. Hence the manufacturer has still much to learn from the humble artists of Hindostan, and the artist may study with advantage the beauty of the form and the marvellous combinations of colour which a deep appreciation of the beautiful in nature, and a careful and laborious study of the true principles of harmony, have rendered almost innate to many of the tribes of India.

Again, passing on from these matters, the works in metal and enamel, carvings in ivory, wood, and stone, and fabrics of silk, wool, cotton, and other materials, there are less attractive, but nevertheless most important, and to many deeply interesting subjects for examination in the class of raw produce. Cotton, Silk, Rice, Indigo, Tea, Sugar, and the thousand other natural or half manufactured productions of the east are, no doubt, at all times interesting to those who live by trading with them, and to whom a trifling fluctuation in price may involve the loss or gain of many thousand pounds. The interest and importance of these things, however, is every year becoming more apparent, as people learn the important fact that these staple productions, as they are called, are the great bonds of union which bind countries together in the peaceful relation of international commerce; and that in many cases the great question of peace or war depends less on conventions, diplomacy, or treaties, than it does on the wants of manufactures and the necessities of commerce. The ordinary productions of the East are, doubtless, well-known and appreciated; but how many there are about which we know little or nothing? how much there is yet to be learnt, not merely of unexplored natural riches, but even of the things used by the natives for many ages? These, then, are matters full of interest for the manufacturer and the merchant, as well as for the natural philosopher or man of science.

But traders and merchants have yet more to learn; by examining the manufactures of India, they may in many cases glean valuable hints from the artizans of eastern countries, and at the same time they may learn how best to suit their own wares, designed for eastern markets, to the wants, habits, and peculiarities of those for whom they are designed.

Returning again, then, to the East Indian department of the Great Exhibition, there can be no question that as it was one of the most interesting, so it was also one of the most suggestive and instructive portions of the Crystal Palace; and every one who attempted to study the innumerable articles collected together felt, at the close of the Exhibition, that the time was too short to make even a cursory examination, and regretted that they could not have another six months to complete it. It was this feeling, coupled with the fact that, large as the Indian collection was, it by no means fully represented either the arts or the productions of India, which led the Society of Arts to propose the East Indian Exhibition of 1853; and the satisfaction with which the announcement was met in all quarters amply proved that the proposal was thoroughly appreciated by the public. One objection, and but one, has been raised, and that was, that only two years having elapsed since THE EXHIBITION of 1851, there would be hardly time to collect sufficient materials for the Indian Exhibition of 1853, and that it would therefore suffer by being compared with the former Exhibition. It is plain, however, that even if many years elapsed between the two Exhibitions, some persons would be sure to draw comparisons; and yet it is also equally plain that as the conditions which gave rise to the two collections are perfectly distinct, the two ought not to be compared. This year's Indian Exhibition will, no doubt, want the attraction of the "Koh-i-noor," and some of the other lions of the Exhibition of 1851; but, on the other hand, it will probably possess many points of interest which were wanting in the former one. The determination, too, of the Council to accept the offer of the Executive of the Dublin Exhibition, and to hold the Indian Exhibition of 1853 at Dublin, was certainly a wise one, and must altogether prevent the possibility of any comparison with that held in Hyde Park, which, as the first English International Exhibition, and considering the peculiar circumstances under which it was produced, can never fairly be brought into rivalry with future Exhibitions.

Contributions from India, it is probable, will now soon begin to arrive, and British Exhibitors of Eastern articles, of whom there are a very large number throughout the country, will very shortly be reminded that it will be necessary for them to send in space vouchers and lists of the articles they propose to exhibit. The Indian Exhibition Committee are now entering on the last and most arduous part of their duties, and if the various promises of support which have already been made to them are faithfully performed, they cannot fail to bring their labours to a most satisfactory and gratifying conclusion.

COLONIAL CORRESPONDENCE.

TRINIDAD.

The Trinidad "Corresponding Committee of the Society of Arts" have, with the sanction of the Governor, offered a series of prizes, with the view of encouraging the industry of the island. The date of this industrial exhibition has not yet been agreed upon; but the prizes (consisting of twenty-five, ten, five, four, and three dollars) were to be given for the best specimens of cattle, poultry, sugar, cocoa, coffee, tobacco, cotton, rice, Indian corn, arrowroot, plantains, yams, cushcush, cassada, farine, sweet potatoes, fruits, spices, oils, flowers, &c. The *Trinidadian* says upon the subject:

> "His Excellency the Governor having obtained from the Council of Government a vote of 100*l.*, with the view of offering prizes, 'for the purpose of encouraging the industry of the Island,' has directed the Corresponding Committee of the Society of Arts to advertise the different prizes, which at some short date will be thrown open for competition. This measure of his Excellency has met with general approbation. Public exhibitions have always proved very effective agents in the cause of advancement. It is one of the peculiarities of the human mind to endeavour to imitate every object from which any benefit is likely to result; therefore, in promoting that quality in the inhabitants, much good may be expected. We are happy to see that prizes are offered for the best samples of tobacco, cotton, and rice. In several parts of the Island the soil is admirably adapted for the cultivation of those articles, and it is indeed to be regretted that, until now, they form so small—indeed, we may say, no part of the staples of the colony. Let us trust that every effort will be used to produce good samples of those articles, and the qualities exhibited may induce some of our planters to give a little attention to such cultivation. Notwithstanding the Ramos process, or all the other processes which skill and ingenuity may devise for the improvement of the manufacture of sugar, we fear, if the present policy of the mother country be continued, that chief staple of these islands will never repay the cultivator. Therefore it is praiseworthy in the Government to use every means available to promote every source of industry, so far as we may, if possible, taste again even a drop of our wonted prosperity, and be a little more independent of the favours of Britain and her philanthropists (?)"

HOME CORRESPONDENCE.

THE SOAP DUTY.

Sir,—It is a principle very generally recognised by political economists, to apply a surplus revenue for the removal of those taxes which restrict the consumption of the real necessaries of life, and at the same time bear with the greatest hardship upon the manufacturers. Upon these grounds I assert a claim for the repeal of the soap duty.

I need scarcely attempt to prove that soap is a necessary of life; this fact I take to be granted, as the effect of cleanliness upon the health and morality of the people has been very powerfully admitted by the erection of baths and washhouses, and the general anxiety manifested for sanitary improvements; but I much fear that the efforts in the good cause are, to a great extent, neutralised by the heavy Excise duty upon soap, which, by nearly doubling its cost, places it beyond the reach of the most necessitous. This argument receives very convincing testimony when the very inadequate increase in the consumption of soap is compared with sugar and other articles by the improved condition of the people.

The allowance of soap to inmates of the workhouses is about ten pounds per head per annum. Assuming this to be no more than is absolutely required, I find that the quantity used for home consumption would only supply, at that rate, 15,790,000 persons; and it may therefore be concluded that the cost of soap, owing to the duty, thus deprives 5,000,000 persons in Great Britain, "the unwashed," of this most important necessary of health and cleanliness, or restricts the whole consumption in that proportion.

The term "unwashed" signifies a man whose intellect is degraded by the filthy condition of the body; and when the structure of the skin, with its millions of pores is considered, not one of which can be stopped without injury to the whole system, and which prevents the enjoyment of a perfect state of health, the cause of his intellectual inferiority is at once ascertained. The connection between the mind and the body, though not to be explained, is so striking as to force itself upon the notice of the least observer; there is such sympathy between the two, that the one cannot suffer and the other be unaffected. The imperfect state of health produced by the want of cleanliness, and not using soap, creates an ungovernable appetite for stimulating liquors; and this is a failing in so large a part of the population, that its pernicious effect on the nation is incalculable. The want of cleanliness also produces disease, and a generally debilitated physical state of many of the poorer class. This causes a constant burden on the poor rates.

Moreover, it is well known that the Excise duty presses very heavily upon the manufacturer. In the first place, he is denied the use of many valuable materials, such as olive acid, cocoa-nut oil, &c., which produce soap slightly heavier than the specific gravity fixed by the Excise. It would thus be subject to the silicated duty, which, in fact, amounts to a prohibition. The hardship of this has been frequently declared, and was shown to the Chancellor of the Exchequer in the spring of 1851, when a sample of foreign soap was exhibited to him, which, by paying the Customs duty only, was admitted at 2*l.* per ton less charge than the Excise duty to the home manufacturer for the same article,—thus offering a bonus to the foreign maker; an anomaly which, it is believed, does not exist in any other trade.

In the second place, the duty is more easily evaded by the dishonest trader than any other. The manufacture is much quicker than malt, and the purchaser has no guarantee that the duty has been paid, as it bears no Excise stamp, like paper. Thirdly, it is a chemical operation of a very uncertain result. The duty is charged upon it before the quality is ascertained; thus, if imperfectly made, it is sold at a great loss to the maker, both of money and reputation, as he is not allowed to remake it; in this instance again acting with more harshness upon the manufacturer than any other Excise duty.

The duty being only collected eight times a year, has brought a number of persons into the business who trade only on the capital thus found them, upon terms that no respectable manufacturer can compete with; and periodically, as the duty becomes due, a large quantity is sold under prime cost, to raise the necessary funds. No security is taken by the Excise for the duty, as their losses by soap-makers will show. Another great annoyance to a chemical manufacturer is the complete prevention of scientific experiments by the Excise regulations; and should any improvements be made, they are immediately divulged, either by the exciseman, who is constantly on the premises, or by the officers, whose duty it is to survey all the soap-makers in his district.

G. F.

TRADE MUSEUMS.

Sir,—I observed with much interest the Report of the Council of the Society of Arts upon the intention of Her Majesty's Commissioners for the Exhibition of 1851, to promote the formation of a Trade Museum, in which samples of every kind of produce which becomes an article of commerce, either as an export or an import, should be deposited for the benefit of the commercial and general public. The proposal of an institution of a character so extensive and practical cannot fail to attract a considerable amount of interest from all classes, and I trust that the active co-operation of the Society will be cheerfully given towards the development and full realization of the scheme.

The importance to mercantile men of possessing accurate information as to the quality of produce and manufactures of the countries with which they are trading, and the difficulty often experienced of effecting contracts in the absence of samples, might be supplied by such a Museum. But allow me to observe, that to render it practically useful to merchants, it would require, first, to be within their immediate reach, and then to be so complete a collection as to represent not only the average qualities of articles, but all their various gradations constantly renewed for every new crop, and enriched with specimens of new manufactures. Both these requisites will be found of extreme practical difficulty in the carrying out of the proposal. The first will naturally suggest the idea, within reach of whom? Samples of grains, and of all kinds of colonial produce, may be as much wanted for immediate reference in Liverpool or Glasgow as in London. Samples of manufactures will naturally be found necessary at Manchester, Leeds, and other manufacturing towns. I am not aware of the intention of the Commissioners as to the use to be made of such a Museum—whether it is intended to be for purely scientific purposes, or for active commercial advantage. In the latter case the samples should be sufficiently large to allow portions of them to be transmitted throughout the country to any merchant or broker making application for them. In the second place, as to the completeness of the collection with respect to qualities, it will be found necessary in many cases to have samples of even special manufactories, such as of Italian silk, some of which, even in the same town, bring higher prices than others. And as for manufacture, I am hardly competent to describe the manifold variations in the value of articles arising from the newness of the pattern, the fineness of the texture, or the richness of the colours. As to samples of grains, it will be requisite to have them from every shipping port, and indeed even from the different inland towns whence the grain is carried into the shipping ports for shipment. As, for example, a cargo of Ancona or Indian corn may contain the quality of Ravenna or of Pesaro, the former weighing many pounds per bushel more than the latter. This may be indiscriminately illustrated with regard to all articles.

Together with the samples, there might be statistical accounts respecting each article. With the samples of grains there might be the number of acres sown with each kind in all countries, the average produce per acre, the cost of carriage to shipping ports, and all necessary expenses to put it free on board. With the samples of silk, the quantity produced in each country, in each town, and of each spinning; the expenses, and commissions, and cost of carriage by land and by sea; and likewise of every other article, such as flax, hemp, leather, hides, wine, paper, glass, provisions, tallow, wool, ivory, rum, cocoa, cochineal, cinnamon, pepper, oil, tobacco, sugar, coffee, tea, indigo, iron, coals, copper, tin, gold, silver, salt, and manufactures and machineries of all kinds; so that we should by this means have constantly before us the progress of all countries in their produce and in their manufactures. Information should also be received on financial subjects, comprising public debts, with the various kinds of stocks and interests thereon, shares, mining, railway, commercial or banking, and all other kinds of public securities. Then as to shipping; the number of vessels and tonnage entered inward and outward, to and from all countries; of vessels and tonnage belonging to each, and their coasting trade, together with all information upon inland navigation. The currencies, exchange, weights and measures, of all nations, would naturally be requisite. How long the differences now existing in every state, and in some cases in every town of a state, are to continue, can hardly be calculated on. The bringing together all such documents, and exposing such palpable facts before an intelligent world, would perhaps do much towards the removal of an inconvenience severely felt by all. Information should be obtained from all Trinity Houses and Harbour Commissioners of all notices important to navigation, relating to light-houses, quarantine, rocks, and sandbanks. The legal information should contain all the laws and ordinances enacted in all states, copies of common law reports, and all official papers issued by the various departments, together with treaties of commerce, and all other important Government notices or accounts. The great object to be aimed at, that of realising an international code of commercial law, by which merchants of all countries may know the laws regulating mercantile transactions everywhere, may receive a new stimulus by the very fact of collecting information on the subject and directing the public mind to its utility.

Besides receiving extensive original information from all countries, the Museum would be found immensely useful for giving to the information which is now constantly before the public, in the shape of Trade Circulars and Board of Trade accounts, a new life, by the perspicuous arrangement of subjects and figures. Mercantile circulars possess now an extensive importance. They furnish the amplest and clearest accounts of the trading of preceding weeks, months, or years; the soundest views as to the future courses of prices; a careful appreciation of concomitant events, political, commercial, or financial, and the most exact accounts as to the possible extent of new crops and production, with some data as to the distribution of supplies. These circulars are now scattered here and there; the information therein contained is received by merchants with their group of letters, and mixed up with their thousand files. It would be of invaluable importance to collect all such circulars, to extract all the information they convey upon each article, and place them in juxtaposition with the samples and other statistical accounts, marking the authority for such information. These circulars should, moreover, be separately arranged according to towns, and they might be received from all shipping and commercial towns in both continents. The same should be done with the Board of Trade accounts. They contain a rich store of information, but for want of practical arrangement, they become comparatively useless to the mercantile classes.

I am glad to learn that there is some chance of the provincial institutions being allowed to receive copies, gratis, of all Board of Trade and Parliamentary accounts of a commercial and economical character. Such public information should be rendered as practically useful as it can possibly be made, by proper arrangement and by publicity.

Having so far extended as to the kind of samples and documents to be placed in the Museum, let me say a few words as to their systematic distribution.

It seems to me that to fulfil the object of the Museum they should all be placed in a duplicate form. Each country and each article should have its proper department. In the first division, each country should be exhibited with the samples of all its productions and manufactures, and all the statistical, economical, commercial, and legal information connected therewith. In the second, each article should be shown with samples of all its qualities and different gradations, with information as to the quantity produced, cost, and carriage from all countries.

As for the site, I should urgently call the attention of the Council of the Society of Arts to the memorial from the London merchants, in which they suggest, "that in order to render such a collection really available for trade purposes, it should be formed in the City of London, and so situate as to be conveniently accessible to those who want to refer to it." Let me allude to the "Gresham College," which was founded for similar purposes in the very heart of the City, at which professorships were established on many branches of practical science. I cannot enter on the subject of want of space in the City, but I quite conceive that if the City merchants were to co-operate with the Royal Commissioners and the Society of Arts, space and a capacious building would be found.

Yours, &c., LEONE LEVI.

TRADE GUILDS.

SIR,—The active members of your Society seem to be trying to do something which shall give a serviceable character to the Society's proceedings. With this view they entered readily into the suggestion of organising a staff of lecturers for Mechanics' and Literary Institutions through the country, but apparently with little hope of permanent success; for these institutions are for the most part resorts for amusement. While the *éclat* of some titled patrons are around them, they thrive; that withdrawn, they fade. But a more substantial class of bodies exists, who really are in want of the spirit which this Society is calculated to communicate. I mean the trading guilds of the city of London. The courts of these Companies are armed with powers over the productions of their trades, and with funds which might be judiciously employed in promoting the progress of the trade, either with reference to the excellence of the manufacture or the extent of its consumption. Unfortunately they have fallen into great abuses. Men following no occupation, military and legal men, are found in large proportions among the blacksmiths, goldsmiths, turners, pewterers, &c., of the city of London. Of course their influence on and connection with the crafts whose names they bear is merely nominal, and their service useless. If, however, this Society could revive the original spirit which constituted these bodies, and make them the instruments for giving to every apprentice such knowledge as would be useful in his particular mystery, or at least the opportunity of gaining such knowledge, then a substantial benefit would be done.

Your's, J. J.

TRUST-DEED.

SIR,—I wish to bring before your notice a matter of immense consequence to Institutions generally; it is their enrolment by Act of Parliament. I have urged this upon our Members, who gave me hopes of such a motion being brought forward this Session. We have been great losers by the non-enrolment of the Mechanics' Institution, having lost in 1850 a library, containing upwards of 2,000 volumes, and other property which had cost more than 400*l.*, through a difference existing among the members, and upon which difference the magistrates could not arbitrate, simply through the Society being an illegal one. The result was a split between the members,—about 150 seizing the whole property, and the remaining 600 members being left without anything. They consequently established our present Institution; and the old one (the Workingman's Institution), after struggling for some time, finally disposed of the greater portion of the property for about 12*l.*, and ceased to exist. This difference and sacrifice of public property occurred through a small portion of the members wishing to introduce works of an objectionable tendency into the library. I dare say many other similar cases could be cited in the annals of Literary, Scientific, and Mechanics' Institutes, which would never have occurred if they were enrolled.

I should think petitions, praying both Houses to pass a law to enrol such institutions, would be favourably received. I should like to hear the opinions of others upon the subject. J. H.

Sir,—If I might make a suggestion to the Society of Arts, I would strongly urge the necessity which exists for a well-drawn model trust-deed for Mechanics' Institutions; one so drawn that it would answer for both the real property of institutions (such as the building, ground, &c.) and the books, furniture, apparatus, &c. A legal gentleman long connected with mechanics' institutions, and who is thoroughly acquainted with their constitution, is of opinion that nothing short of an Act of Parliament will grant the protection necessary for securing the books, &c., from being detained by any person who takes them out. He writes: "My impression is, that an Act of Parliament will be found indispensable for full protection, though no doubt protection to a limited extent may be attained by carefully-drawn trust-deeds." If the Council of the Society of Arts would take up the question, it would confer a great boon on all the institutions in connection with it.

Your's, &c., H. D.

STEAM NAVIGATION.

Jan 17th, 1853.

Sir,—A correspondent in the article on the "Progress of Steam Navigation," No. VII., p. 76, is in error in believing the law of tonnage obliged ship-builders to make bluff bows and sterns. The old law (now repealed) by leaving out the important item depth, gave them the opportunity to build; and as the Navigation Laws compelled ships to carry a certain number of men and boys per 100 tons register instead of burthen, ship-owners were not slow in insisting on having ships built that would carry nearly double their register tonnage. Secondly, the "Witch of the Wave," "Challenge," and other ships named, have no auxiliary power whatever, the increased speed being entirely due to the improvements in hull, rig, and sails, brought out by the competition now going on between this country and America.

I remain, Sir, yours truly,
W. Roberts.

PROCEEDINGS OF SCIENTIFIC SOCIETIES.

Institute of British Architects, Jan. 10.—Mr. D. Mocatta, V.P., in the chair. Mr. Donaldson, V.P., read an interesting paper on Byzantine Architecture in France, in which he pointed out the analogy existing between the churches of the ancient Greek Empire and those which were built in France in the eleventh and twelfth centuries; and showed that that analogy, though not complete in all its details, was sufficiently so to authorise the classifying them under one modified name, and attributing them to one common type. He instanced various churches in the heart of the central provinces of France, which would come under the term Gallo-Byzantine, explaining what were their characteristics, and how the Byzantine element was developed or modified in them. Mr. Donaldson having concluded his remarks, a conversation arose upon the topic under discussion, in which Dr. Henzlmann, Mr. Inman, Mr. G. G. Scott, Mr. Papworth, Mr. Alfred Bailey, and Mr. Billing took part.

Geographical Society, Jan. 10.—Sir Roderick J. Murchison, President, in the chair. Captain Allen, R.N., read a paper on the feasibility of forming a canal between the Gulf of Akaba and the Dead Sea. The paper was principally devoted to an attempt to account for numerous appearances of sudden and violent drainings on the sides of the basin of the Dead Sea. The level of the Dead Sea, as is known, is considerably below that of the Mediterranean—a fact which, although known, has not, according to Captain Allen, been satisfactorily accounted for. He made certain observations during his travels along its shores, and had come to the conclusion that the Gulf of Akaba, on the north-eastern point of the Red Sea, was at some distant period connected with the Dead Sea, although the channel is now filled up, either by a gradual upheaving of the land, by the growth of coral, by the deposit of sand and gravel thrown up by the sea, or by the sand of the desert. The tract of country between the Gulf of Akaba and the Dead Sea does not seem as yet to have been satisfactorily surveyed; but Captain Allen concludes that the Dead Sea was also originally connected with the Mediterranean, the Lake of Tiberias being one of the links of the chain; and that by evaporation the intervening district was dried, and by upheavals or otherwise, barriers made, which have now divided what might have been an unbroken sea into a series of lakes. The Secretary then read a paper entitled "Outlines of a Journey in Palestine in 1852," by the Rev. Dr. E. Robinson and others, communicated by his Grace the Duke of Northumberland.

Institution of Civil Engineers.—Jan. 11.—J. M. Rendel, Esq., President, in the chair. The paper read was "On the Nature and Properties of Timber, with notices of several methods now in use for its preservation from decay," by Mr. H. P. Burt, Assoc. Inst. C. E.

The author first examined the different species of home and foreign grown timber, their various properties, uses, tendencies to decay under certain circumstances; the most apparent causes of dry rot, the formation of fungi, and the action of wet and heat; noticing the extraordinary duration of specimens of timber found in Egypt, in the ruins of Nineveh, and in the more recent monastic and castellated edifices of this country. The chemical constitution of wood was examined, in order to trace the origin of decay, and to lead to the consideration of the most efficient means of arresting it. The necessity for some efficacious and yet moderately cheap system of preserving timber was insisted on, from the great demand for that material for various engineering works; and in some countries, devoid of good means of inland communication, it had been found more economical to buy fir timber in the north of Europe, and saturate it with creosote in England, and then convey it to where it was required.

The earliest record of preserving animal and vegetable substances was traced back to the Egyptians, whose mummies were embalmed by being boiled in pitch, which was found floating in the lakes; the linen and the timber so preserved gave the idea in the last century for adapting the process to the wants of the period, and several of the patents granted were enumerated and commented on.

The paper was illustrated by a series of models and drawings, showing the various apparatus for the several processes, enlarged diagrams of microscopic views of sections of several kinds of timber, both in the natural state and after being creosoted; experiments on the degrees of saturation by the process, and on the transverse strength of the timber; with the results of the improvements introduced into the system by the author, whose experience had been very extensive.

Jan. 18.—J. M. Rendel, Esq., President, in the chair. The discussion on Mr. Burt's paper "On the Preservation of Timber," occupied the whole of the evening. Mr. Bethell entered at great length into a description of the process of Creosoting timber, and the mechanical contrivances for accomplishing that object.

PROCEEDINGS OF INSTITUTIONS.

BAKEWELL.—On Tuesday the 11th inst., an interesting lecture was delivered in connection with the Bakewell and High Peak Institute, on "Hannibal and the Second Punic War," by the Rev. H. K. Cornish. The lecture was one of a series on Ancient History from its earliest period. The lectures in connection with this Institute are generally well attended; and there can be no doubt whatever that it is working its way gradually, and effecting considerable improvement among many persons who have never been within the reach of such literary advantages as are furnished through the medium of this Institution. Independently of the lectures given from time to time by different lecturers on the most interesting subjects in History, Biography, Natural History, Natural Philosophy, the Drama, &c., there is an excellent library belonging to the Institution, which is well supported and is gaining continually fresh accessions of books and subscribers.

CHELTENHAM.—On Tuesday evening, the 11th inst., Dr. Humphreys, the head master of the Cheltenham Grammar School, founded in the reign of Queen Elizabeth, delivered a lecture at the Literary and Philosophical Institution, on "Freedom *versus* Absolutism, or the Coming Struggle." The president, W. M. Tartt, Esq., in introducing the lecturer, observed that the title of the lecture with which Dr. Humphreys was about to favour them had excited some apprehension lest it should infringe upon a supposed regulation or law of the Institution, which excluded religion and politics. He should tell them there was no such law; but it had always been, very properly, the custom to exclude controversial theology and party politics. In dealing with any of these subjects as historical or abstract questions, much must be left to the lecturer himself; and when they considered the talent and high position of Dr. Humphreys, they would agree that this council were perfectly justified in placing the fullest confidence in his judgment and discretion.

The lecture was a very able one, and was greeted throughout with loud applause; and the announcement of a second lecture by Dr. Humphreys was most cordially received.

HALSTEAD.—The Ninth Annual General Meeting of the Mechanics' Institute was held on Wednesday se'nnight, G. W. Harris, Esq., Vice-President, in the chair. The Report expressed the gratification of the Committee at the decided progress made during the past year, a considerable increase in the number of members having been effected; and also at the superior accommodation provided for the Institute in the New Town Hall, through the kind consideration of the Committee of the Town Improvement Company. It further set forth the advantages anticipated by the union of this Institution with the Society of Arts, in the greater facilities for securing popular lectures. Regarding this as a new era in its history, the Committee expressed the most sanguine hopes of increasing prosperity. Although this Institution had been considerably crippled for some time past in its efficiency for want of suitable accommodation and lecture-room, much had been quietly effected during the nine years of its existence through the agency of a well-selected library and a liberal supply of newspapers. The reading-room was well frequented, and the interest of the members in its welfare unabated, whilst the funds were maintained. The number of members is 157, and the exchanges of books generally exceed 4000 annually. All the members of the Committee, with one exception, were re-elected. Votes of thanks were passed to the Committee and officers for their services; and also to E. Hornor and J. G. Shepherd, Esqrs., for valuable books, &c., presented to the Institution.

HARROGATE.—On Tuesday evening, Mr. Ross, of York, delivered a Lecture to the members and friends of the Mechanics' and Literary Institute on "Decision of Character." The qualities of mind essential to decision of character were largely and ably dwelt upon by the lecturer, who illustrated his subject, and fortified his positions by referring to the conduct and achievements of many eminent individuals.

LOUGHBOROUGH.—On the evening of Tuesday, 11th inst., a *Conversazione* of the members was held in the Society's Room, which proved most instructive and interesting. The room, on the occasion, was converted into a temporary museum, by the exhibition of various objects of antiquity, curiosity, and art. All the gentlemen who have given lectures to the Society were invited, and several of them added to the enjoyment of the evening by their presence. A large table was devoted to a profuse and *recherché* provision of refreshments. A company of excellent glee-singers, under the direction of J. B. Cramer, Esq., who presided at the pianoforte, entertained the assembly at different stages of the proceedings. John Cartwright, one of the Vice-Presidents, conducted the business of the evening; and short lectures, as follows were given, which were well received:—Rev. H. Alford, B.D., on "Greek Music;" J. F. Hollings, Esq., on "The Sepulchral Antiquities of Leicestershire;" Rev. A. Fearon, B.D., on "Some interesting Curiosities he exhibited;" Rev. F. Lowe, on "Monumental Brasses;" Rev. Kirke Swan, on "The Total Eclipse of the Sun;" Mr. B. Baldwin, on "Photography;" C. W. Wood, Esq., on "Harmony." The Rev. E. Smythies, Mr. E. Eddowes, and J. Cartwright, Esq., also made some interesting remarks.

Northallerton.—On Monday evening, the 20th Dec., Mr. George Richardson, of Thirsk, delivered an admirable Lecture on "Life Assurance," to the members of the Mechanics' Institute. The apparent abstruseness of the subject was pleasingly simplified, and its dryness was altogether obviated by the agreeable style of the lecturer, while the great value and importance of life assurance itself were powerfully set forth.

Salisbury.—An admirable lecture was delivered at the Literary Institution on Tuesday last, by C. B. Wall, Esq., M.P., on "Pottery and the Ceramic Art." The lecturer took a rapid survey of the rise and progress of the art in various countries, particularising those in which it had acquired peculiar excellence; and showed some rare and extremely beautiful specimens, from his own collection, of pottery from China, Dresden, France, and our own country. Among these was a tea-pot, presented by one of the Emperors of China to Lord Macartney, at the time of his embassy to that country. It was of singular shape and proportions, but extremely beautiful in material and colours. The lecturer was exceedingly eloquent upon the utility of the ceramic art and its tendency to elevate the taste of the people, and urged the necessity of schools of design, in order that it might be cultivated with more and more success.

Sudbury.—On Tuesday, 28th ult., the Rev. A. Anderson gave an interesting lecture at the Reading Room of the Literary Institution, on "The Character of Oliver Cromwell, as a Warrior, a Statesman, and a Christian;" and on the 11th inst., the Rev. C. W. Green, M.A., delivered at the Corn Exchange a very instructive lecture on "Carbon and its Compounds," illustrated by diagrams, and some interesting experiments with carbonic acid gas, &c.

TO CORRESPONDENTS.

Notice.—Members, and others, who can furnish or obtain original information or suggestions on the subjects included in the Society's Premium-list, or other topics connected with the Society's various departments of operation, are invited to communicate the same to the Secretary, in as condensed a form as possible, for the purpose of being either read and discussed at the evening meetings, or inserted in the Society's weekly Journal. Anonymous letters cannot be attended to. All communications, whether the author's name is to appear or not, must be accompanied by the writer's name and address.

Country Institutions.—Correspondents who are so good as to send reports of proceedings of Local Institutions, are requested to forward them immediately after the Meeting to which they refer, and not later than Tuesday morning, if intended for insertion in the following Friday's Journal.

B. B. (*Loughborough*).—The "Report of the Juries on the Great Exhibition" is published at a price of £1 1*s*.

⁂ The article on Enamels, though in type, cannot appear this week, owing to want of space.

QUESTION FROM CORRESPONDENT.

Stamping Letters—Is there any machinery invented which would supersede the present crude mode of stamping letters by hand? Foreign letters are generally much better marked at their respective post offices than English ones: ours are most slovenly; the ink being bad, is generally rubbed and indistinct. In Courts of justice, it is frequently of great importance to verify testimony by the date and postmark on letters; in many cases this is most difficult, and sometimes impossible, as they are so indistinct. A slight expense would provide new and improved stamps, and confer a benefit on the public. (No. 26.)

MISCELLANEA.

CRYSTAL PALACE, SYDENHAM.

The slight improvement of late in the weather has been abundantly taken advantage of by the contractors for the New Crystal Palace and its various outlying works; and since our former notice, a striking progress has been made in all directions. A large portion of the building is already covered with glass, of increased weight and strength, and with a marked improvement as to exclusion of the weather. To the north of the centre transept a long range of the less elevated portion has been taken possession of by Mr. Owen Jones, and serves both as a storehouse for the care of casts, which are almost daily arriving from the Continent, and as a workshop for their junction and erection. In one part —the future Egyptian court — Mr. Bonomi and a numerous staff are at work in forming models of Egyptian buildings, and making and arranging casts of the most characteristic of the treasures of Egyptian art possessed by the nation in the British Museum,—*here* to be brought within the comprehension of a larger class than they *there* attract. In another part lies a Venetian gondola, with its quaint ironwork and carving—one day, with its native gondolier, to be an ornament of the sheet of water in the park. At the other end of the works the building is rapidly rising in height, and some of the ribs of the transept roof are in their places, ready for the glaziers to commence their operations almost immediately. From this lofty portion the view on all sides is very striking, from the spires of London and Westminster, on the one hand, to the wooded hills of Kent on the other. The whole of the park is distinctly seen, and some idea is formed of the nature of Sir Joseph Paxton's task. The broad walk is already laid out, and the various basins are all in a state of great forwardness. The sinking of the well is proceeding with great rapidity, and enormous pipes, three feet diameter, for feeding the fountains, are daily arriving on the ground, and being fixed in their proper positions. Further down is the branch line of rails from the Brighton Railway.

Boracic Acid.—A new source of this important substance has recently been discovered in South America; beds of native borate of lime having been found in Iquigne, in the vicinity of the deposits of nitrate of soda. The borate appears to exist in considerable quantity, associated with beautifully crystallised glauberete, or native sulphate of soda, similar to the well-known salt which occurs in the neighbourhood of Madrid. The first shipment of the borate was recently sold at Liverpool, at 60*s*. a cwt.

Crowley's Safety Switch, and Self-acting Railway Signals.—By this invention it is intended to make every train work the signals, and also fix the switches at any station to which one may be approaching. As any truck or train enters a station, or is shunted on to the line, the flanges of the wheels will depress a lever, which, acting on an electro-magnet, will release a balance-weight, and cause the danger-signal to be put up at the station, and also at a distance along the line (say from 500 to 700 yards, according to circumstances). When a train has arrived at a distance of, say from 600 to 700 yards of a station, the flanges of the wheels, acting on a small lever in connection with an electro-magnet, will cause all the switches leading to the line on which the train is advancing to become fixed, so that nothing can thoughtlessly be shunted through them while the train is running from the distance-signal to the station. The switches will remain fixed until the train has passed the station. Should, however, it be necessary to attach any additional carriages to a train standing at a station, they may be released by turning a small handle close to the lever-box. When the signals are at "Danger," they will remain in that position until pulled down, so that a neglect of duty will only cause the temporary delay of a train; whereas, under the present system, it may be attended with serious consequences. The cost of application to existing signals, and the expense of maintenance, will be inconsiderable. The signals are now in operation at the Red-hill station, on the Brighton Railway.

PATENT LAW AMENDMENT ACT, 1852.

APPLICATIONS FOR PATENTS AND PROTECTION ALLOWED.

From Gazette, 14*th Jan.*, 1853.

Dated 31*st Dec.*, 1852.

1207. T. Harrison—Improvements in steam-engines.
1209. T. B. Smith—Calcining ores, construction of furnaces for that purpose, and converting certain products into an article of commerce not hitherto produced therefrom.
1211. J. Lord—Improvements in carriage-steps.

Dated 1*st Jan.*, 1853.

1. W. Wilkinson—Taps and filtering apparatus.
3. J. Addison and H. S. Eicke—Tessellated pavement.
4. J. S. J. Eicke—Deodorising American and other resins for mixing with grease, tallows, and wax, &c.
5. J. J. W. Watson and W. Prosser—Manufacturing steel and carburizing iron.
6. T. Billycald—Apparatus for looped fabrics.
7. J. Brough—A new manufacture of a vitrified substance, and its application to various useful purposes, and new applications of known plastic substances.
9. M. Tomlinson—Manufacture of "species," or show-jars.

Dated 3rd Jan.

10. David Hulett—Ornaments for lamps, &c., and architectural purposes.
11. J. Bleackley—Machinery for washing, bleaching, &c., yarns and fabrics.
13. L. F. Vaudelin—Retarding and stopping railway-carriages.
14. C. E. Amos—Centrifugal pumps.

Dated 4th Jan.

15. P. A. C. de Fontainemoreau—Improvements in axle-boxes. (A communication.)
16. E. C. Shepard—Manufacture of gas.
17. J. J. Welch and J. S. Margetson—Travelling-cases, wrappers, and articles of dress hitherto manufactured of leather.
19. G. Gwynne and G. F. Wilson—Treating fatty and oily matters.
20. W. E. Newton—Atmospheric engines. (A communication.)

Dated 5th Jan.

21. J. B. Pascal—Motive power.
22. G. Eugene M. Gerard—Manufacturing and treating caoutchouc.
23. G. P. de L'Huynes—Medical portative electro-galvanic apparatus.
24. T. Shilton—Weighing-machines.
25. C. F. Whitworth—Railway signals.
26. F. Edwards—Lettering, figuring, and ornamenting enamel for dials, &c.
27. F. Arnold—Heating water in bath or other vessel.
28. H. N. Penrice—Propelling vessels.
29. W. Bendell—Treating sewage waters and matters.

Dated 6th Jan.

30. E. Grillett—Renewing teeth of files.
32. E. Hutchinson—Preparing, drying, and treating wheat and other grain.
34. R. W. Savage—Alarum bedstead.
36. R. Whinery—Manufacture and treatment of leather, with or without other materials.
38. W. E. Newton—Roving, spinning, &c., cotton, &c., called "Larwill's Improvements." (A communication.)

From Gazette, 18*th Jan.*, 1853.

NONE.

WEEKLY LIST OF PATENTS SEALED.

Dated 12*th Jan.*, 1853.

15. Joseph Barker, Kennington-lane—Improvements in fastenings.
22. Henry Walker Wood, Briton Ferry, near Heath—Improvements in the construction of ships and other vessels.
31. John Dunkin Lee, Leadenhall-street—Improvements in covering railway trucks and other vehicles.
34. Robert Beath, Godmanchester—Improvements in the manufacture of bricks and articles through moulding orifices.
35. Thomas Huckvale, Choice Hill, near Chipping Norton—Improvements in instruments for administering medicine to horses and other animals.
39. Felix Abate, 21, George-street, Hampstead-road, and John Julius Cléro de Clerville, Newman-street—Improvements in preparing, ornamenting and printing on surfaces of metal and other substances.
41. Joseph Barrans, Queen's-road, Surrey—Improvements in steam engine boilers.
45. Charles William Rowley Rickards, 28, New Cut, Blackfriars-road—Improvements in tongs for screwing pipes and tubes.
47. Stephen Perry, Red Lion-square—Improvements in inkstands or inkholders.
48. Edmund Morewood, and George Rogers, Enfield—Improvements in rolling metal.
49. Edmund Morewood, and George Rogers, Enfield—Improvements in coating metals.
124. John Husband, Highway, New-road—Improvements in paving roads and other surfaces.
125. Thomas Hunt, Lemon-street—Improvements in fire arms.
130. Isaac Westhorp, 9, George-yard—Improvements in grinding wheat and other grain.
137. John Jackson, Exchange-court, Liverpool—Improvements in gas burners.
141. Astley Paston Price, Margate—Improvements in the manufacture of citric and tartaric acids, and of certain salts of potash soda, ammonia, lime and baryta.
167. Joseph Faulding, Edward-street, Hampstead-road—Improvements in machinery for sawing and cutting wood and other substances.
169. Moses Poole, Serle-street—Improvements in machinery for mowing and reaping.
243. Samuel Getley, 6, Ivy-street, Birkenhead—Improvements in water closets.
244. Joseph Westby, Nottingham—Improvements in machinery applicable to the manufacture of lace, and other weavings.
245. William Dray, Swan-lane, London-bridge—Improvements in machinery for reaping and mowing.
247. Christopher Nickels, York-street, Lambeth, and Frederick Thornton, Leicester—Improvements in weaving.
271. Joseph Westby, Nottingham—Improvements in twist lace machinery.
272. Joseph Hill, Birmingham—Machine for stamping metals and forging iron and steel.
276. Francis Warren, 16, Millbank street—Improvements in gas burners
277. Admiral the Earl of Dundonald, Belgrave-road—Improvements in coating and insulating wire.
278. William Adolph, 9, Bury-court, St. Mary Axe—Improvements in apparatus for warming and ventilating rooms.
295. Peter Ward, Oldbury, Worcester—Improvements in the manufacture of sal-ammoniac, and obtaining salts of ammonia.
336. Charles Matthew Barker, 22, Portsmouth-place, Kennington-lane—Improvements in sawing wood.
337. Henry M'Farlane, 8, Lawrence-lane—Improvements in stoves and fireplaces.
357. Thomas Barnabas Daft, Isle of Man—Improvements in land conveyance.
376 Henry M'Farlane, Lawrence-lane—Improvements in constructing metal beams or girders.
389. James Webster, Leicester—Improvements in the construction of springs.
390. John Swindells, Pollard-street, Manchester, and William Nicholson, Manchester—Improvements in obtaining oxygen gas, and applying it in the manufacture of various acids and chlorine for oxidating metallic solutions, and for ageing and raising various colouring matters.
413. Charles Tiot Judkins, Britannia Works, Manchester—Improvements in machinery or apparatus for sewing or stitching.
420. John Oliver York, Paris—Improvements in connecting and in fixing rails in railway chairs.
432. Edwin Heywood, Glasburn, Yorkshire—Improvements in looms.
446. Robert Bird, Crewkerne, Somerset—Improvements in straining webs of saddles.
448. James Otams, 2, Horton-villas, Camden-road, Holloway—Improvements in the manufacture of manure.
464. John Gilbert and Samuel Nye, 79, Wardour-street—Improvements in mincing meat and other substances.
469. Robert Hoppen, Plymouth—Improvements in apparatus for mincing meat.
480. John Fowler, Temple-gate, Bristol—Improvements in machinery for draining land.
481. John Fowler, Temple-gate, Bristol—Improvements in laying wires for electric telegraphs.
482. John Fowler, Temple-gate, Bristol—Improvements in reaping machinery.
483. John Fowler, Temple-gate, Bristol—Improvements in machinery for sowing seed and depositing manure.
491. James Wilson, 37, Walbrook—Improvements in printing fabrics of silk, or partly of silk.
509. Charles Watson, 31, Rhodes-street, Halifax, Yorkshire—Improvements in ventilation.
510. John Tayler and James Slater, Manchester—Improvements in machinery, apparatus, or implements for weaving.
621. Bernhard Samuelson, Banbury, Oxford—Improvements in breaking up and tilling land.
657. John Melville, Porchester-terrace—Improvements in the application of iron and of wood, combined with iron or other substances, to buildings and other constructions.
746. Joseph Cowen, Blaydon-burn, near Newcastle-upon-Tyne, and Thomas Richardson, Newcastle-upon-Tyne—Improvements in the manufacture of sulphuric acid.
751. Peter Armande le Comte de Fontaine Moreau, 39, Rue de l'Echiquer, Paris, and 4, South-street, Finsbury—Improvements in lamps. (A communication.)
762. Joseph Burley, Halifax, Yorkshire—Improvements in apparatus for cutting fustians and other fabrics to obtain a cut pile surface.

Dated 13th Jan.

36. James Hare, Birmingham—Improvements in expanding tables and music stools.

46. James Stewart, Old St. Pancras-road—Improvements in the action of pianofortes.
122. Duncan Bruce, Canada, North America—Improvements in rotary steam-engines.
300. Professor Andrew Crestadoro, Adelphi-place, Salford—Improvements in impulsoria, or machinery, for applying animal power to railways, waterways, and common roads.
355. Peter Warren, Stratmore-terrace, Shadwell—Improved materials, applicable to many purposes for which papier maché and gutta percha have been, or may be, used.
507. Felix Lieven Bauwens—Improvements in treating fatty matters prior to their being manufactured into candles and mortars, which are also applicable to oils.
532. John Lee Stevens, Kennington—Improvements in furnaces.
556. Charles Arthur Redl, 27A, Davis-street, Berkeley-square Improvements in telegraphing or communicating signals at sea and otherwise.
702. Joseph Tringham Powell, 28, Fenchurch-street—Improvements in mixing, baking, and drying materials in the making of biscuits and other articles where plastic matters are employed.
755. James Robertson, Glasgow—Improvements in the manufacture of casks, and other wooden vessels.
778. Henry Vernon Physick, Aberdeen-place, Maida-hill—Improvements in electric telegraph apparatus, and in machinery or apparatus for constructing the same.
812. William Crosskill, Beverley, York—Improvements in clod crushers, or rollers for rolling, crushing, or pressing land.
856. Richard Dudgeon, New York, U.S.—Raising heavy weights by means of a portable hydraulic press.

Dated 14th Jan.

3. Peter Spence, Pendleton Alum Works, Manchester—Improvements in obtaining power by steam,
212. Thomas Slater, Somers'-place, New-road, St. Pancras, and Joseph John William Watson, Old Kent-road—Improvements in the application of electricity to illuminating purposes.
265. David Collison, Preston—Improvements in the construction of shuttle skewers.
579. Alfred Vincent Newton, 66, Chancery-lane—Improvements in machinery for cutting corn and other crops.
595. Joseph John William Watson, Old Kent-road, and Thomas Slater, Somers' place, New road, St. Pancras—Improvements in galvanic batteries, and in the application of electric currents to the production of electrical illumination and of heat, and in the production of chemical products by the aforesaid improvements in galvanic batteries.
666. Benjamin Baillie, 118, Wardour-street, Soho—Improvements in apparatus for drawing off and registering the flow of fluids.
685, Robert Knowles, Chorlton-upon-Medlock, Lancaster—Improvements in boilers, and apparatus for generating steam.
695. Robert Buncombe Evans, Colyton, Devon.—Improvements in the manufacture of charcoal.
741. Samuel Sedgwick, Piccadilly—Improvements in lamps.
747. Robert Reyburn, Greenock—Improvements in the composition of lozenges, and other confections.
774. John Hinchcliff, Leeds, and Ralph Salt, Leeds—Improvements in steam engines.
808. George Wilson, York Glass Company, York—Improved manufacture of glass bottles and jars.
827. John Kilner, Thornhill Lees, near Dewsbury, Yorkshire—Improvements in the means of insulating the wires of electric telegraphs.

Dated 17th Jan.

11. Thomas Wood Gray, of Warkworth-terrace, Commercial-road, Limehouse—Improvements in cocks and valves.
129. Joseph Cox, of Heston, Middlesex—Improvements in the manufacture of gates and hurdles.
146. Edwin Lewis Brundage, of Jewin-crescent—Improved machinery for forging nails, brads, and screw-blanks.
204. Bendix Ising Jacoby, of Hamburg—Improvements in the means of fixing artificial teeth.
275. Alphonse René le Mire de Normandy, of Judd-street—Improvements in obtaining fresh-water from salt-water.
358. William H. Smith, of Montgomery, Pennsylvania, America—Improvements in the manufacture of lava-ware.
533. Anthony Fothergill Bainbridge, of Putney—Improvements in the manufacture of artificial flies and other bait for fish.
534. Samuel Clarke, of 55, Albany-street, Regent's-park—Improvements in the manufacture of candles.
564. William Bates, of Leicester—Improvements in apparatus for getting up stockings and other hosiery goods.
574. John Gedge, of 4, Wellington-street, Strand—Improvements in printing-presses or machines.
588. George Fergusson Wilson, of Belmont, Vauxhall, and Edward Partridge, of Wandsworth—Improvements in the instruments or apparatus used when burning candles.
592. George Dixon, of Dublin—Improvements in bleaching palm-oil.
600. George Fergusson Wilson, of Belmont, Vauxhall—Improvements in the manufacture and treatment of oils.
602. John Chubb, of St. Paul's Churchyard—Improvements in locks.
620. George Fergusson Wilson, of Belmont, Vauxhall—Improvements in treating wool in the manufacture of woollen and other fabrics.
635. Charles Pryse and Richard Redinan, of Birmingham—Improvements in a certain description of fire-arms.
655. Robert Booty Cousens, of 50, Halliford-street—Improvements in machinery for cutting cork.
656. Admiral the Earl of Dundonald, of Belgrave-road—Improving bituminous substances, thereby rendering them available for purposes to which they never heretofore have been successfully applied.
664. John Arthur Phillips, of 8, Upper Stamford-street, Blackfriars—Improvements in purifying tin.
665. Thomas Hicks Chandler, of Aldbourn, Wilts—Improvements in hoes.
667. William Frederick de la Rue, of Bunhill-row, and George Waterston, of Edinburgh—Improvements in writing-cases.
694. Charles Griffin, of Leamington Spa, Warwick—Improvements in apparatus for fixing type or printing surfaces in a chase.
627. Obed Hussey, of Manchester—Improvements in reaping-machines.
710. James Noble, of Leeds, Yorkshire—Improvements in combing wool and other fibres.
711. Colin Mather and William Wilkinson Platt, of Salford Iron-works, Salford—Improvements in machinery for finishing linen, cotton and other fabrics.
738. Richard Coad, of London, and John Peers Coad, of Liverpool—Improvements in fireplaces and means of applying heat.
740. Admiral, the Earl of Dundonald, of Belgrave-road—Improvements in apparatus for laying telegraphic or galvanic wires in the earth.
760. John Dent Goodman, of Birmingham—Improvements in the boxes and axles for carriages. Being a communication.
761. Samuel Holt, of Stockport, Cheshire—Improvements in weaving cut piled fabrics.
771. John Thomas Way, of Holles-street. Cavendish-square, and John Manwaring Paine, of Farnham—Improvements in the manufacture of burned and fired ware.
772. Isaac Lowthian Bell, of the Washington Chemical-works, Newcastle-upon-Tyne—Improvements in the treatment of certain compounds of iron and sulphur.
785. Peter Carmichael, of Den's Works, Dundee—Improvements in machinery for winding yarn or thread.
786. John Burgees, of Rastrick, Halifax, Yorkshire—Improvement in dying wool.
790. Benjamin Nickels, of 13, Albany-road, Surrey—Improvements in the manufacture of adhesive plaster.
802. John Brettell Collins, of Birmingham—Improved flooring cramp or lifting jack.
818. William Hedges, of Streatham Hill, Surrey—Improvements in carriages.
833. John Frearson, of Birmingham—Improvements in the manufacture of hooks for garments.
862. Andrew Jeffrey, of Chirnside, Berwick, Scotland—Improvements in reaping-machines.

Dated Jan. 19th.

211. Thomas Scott, of 111, Drummond-street, Euston-square—Improvements in applying and transmitting motive power, and in accelerating the progress of bodies in motion.
308. John Lewthwaite, of Halifax, Yorkshire—Improvements in cards and tickets, and in machinery for cutting, printing, numbering, and marking cards, tickets, and papers.
452. John Carnaby, of 130, St. John-street, Clerkenwell—Apparatus for turning, managing, and regulating the main taps of gas pipes laid on to houses or buildings, at a part of the house or building distant from the main tap.
627. Alfred Augustus de Reginald Hely, of Cannon-row, Westminster—Improved shade or chimney for lamps, chandeliers, gas, and other burners.
713. John Henry Johnson, of 47, Lincoln's-Inn Fields—Improvements in machinery or apparatus for sewing and stitching. Being a communication.
824. John Winter, of Bradford, Yorkshire—Improvements in the mode of combining bars of iron, so as to form larger masses on pieces of iron applicable in the manufacture of axles, shafts, columns, beams, cannon, and other articles.
825. John Winter, of Bradford, Yorkshire—Improvements in the manutacture of wheels.
865. Charles Harford, of Down-place, near Windsor—Improvements in rotatory engines.
871. James Taylor, engineer, of Messrs. Taylor and Co., of Britannia-works, Birkenhead, Chester—Improvements in or applicable to floating graving docks, for repairing and building ships.
880. Alexander Turiff, of the New Town Foundry, Paisley, Renfrew, N.B.—Improvements in moulding or shaping metals.